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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,857	04/05/2004	Kazuhiro Wakao	118644	1832
25944	7590	08/29/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			WACHTEL, ALEXIS A	
			ART UNIT	PAPER NUMBER

1764

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/816,857

Applicant(s)

WAKAO ET AL.

Examiner

Alexis Wachtel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4-5-04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 22, 23, 25 and 31-36 is/are rejected.
- 7) ☐ Claim(s) 20, 21, 24 and 26-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4-5-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 19,33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the instant claim is missing steps that the skilled practitioner would require to carry out in method. For example, it is not clear what operational parameters allow for a predetermined temperature to be calculated. How is this predetermined temperature determined?

Regarding claim 33, it isn't clear why or how it is possible that the temperature detected on the downstream side of the reforming catalyst to be higher than the predetermined temperature, the detected temperature then falls below a predetermined temperature. What method steps take place that allow for the temperature to increase beyond a set temperature and then subsequently fall below said set temperature.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1,2,13-17,19,20,22,23,25,31,32,34,35 are rejected under 35

U.S.C. 102(a) as being anticipated by US 6641944 to Kawasumi.

With respect to claim 1, Kawasumi discloses a reforming catalyst degradation determining apparatus which determines whether a reforming catalyst that reforms a mixture of air and fuel is degraded, comprising: a temperature sensor (71) that detects a temperature of the reforming catalyst; and a determining portion (90) that is capable of determining whether the reforming catalyst is degraded based on the temperature of the reforming catalyst detected by the temperature sensor.

With respect to claims 2,14-17, the instant limitations are method claims and are given weight insofar as their effect on the structure of the reforming catalyst degradation determining apparatus.

With respect to claim 13, wherein the temperature sensor (71) is disposed on a downstream side of the reforming catalyst.

With respect to claim 19, a reforming catalyst degradation determining method for determining whether a reforming catalyst that reforms a mixture of air and fuel is degraded, comprising the steps of: detecting a temperature of the reforming catalyst; and determining whether the reforming catalyst is degraded based on the detected temperature of the reforming catalyst (Col 3, lines 38-44).

With respect to claim 20, this limitations does not distinguish over the detected catalyst temperature of Kawasumi as this determined temperature as claimed is not specific to a particular temperature and therefore reads on the detected temperature of the relied on prior art.

With respect to claim 22, Kawasumi discloses that the catalyst deterioration can be determined based on the ratio of outlet to inlet temperature (Col 4, lines 25-30) which reads on the instant claim limitations.

With respect to claim 23, Kawasumi discloses that the catalyst deterioration can be determined based on the ratio of outlet to inlet temperature (Col 4, lines 25-30) Which is by definition a rate. Additionally, if the temperature is not at a predetermined temperature, this would signal that the catalyst is deteriorated (Col 3, lines 39-44).

With respect to claim 25, wherein the predetermined rate is determined based on the time it takes for the temperature of the reforming catalyst to rise to a predetermined temperature after the temperature of the reforming catalyst starts to rise.

With respect to claim 31, Kawasumi teaches that the temperature on a downstream side of the reforming catalyst is detected (temp detector 71 detects temp).

With respect to claim 32, Kawasumi teaches that the reforming catalyst is determined to be degraded if the temperature detected on the downstream side of the reforming catalyst is higher than a predetermined temperature (Col 3, lines 38-44).

With respect to claim 34 , wherein the temperature on an upstream side of the reforming catalyst and the temperature on the downstream side of the reforming catalyst are detected.

With respect to claim 35, wherein whether the reforming catalyst is degraded is determined based on a difference in the temperature on the upstream side of the reforming catalyst and the temperature on the downstream side of the reforming catalyst.

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5. Claims 1,13 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2000-268840 to Tetsuo.

With respect to claim 1, Tetsuo discloses a reforming catalyst degradation determining apparatus which determines whether a reforming catalyst that reforms a mixture of air and fuel is degraded, comprising: a temperature sensor (6,32,10,47,66,51) that detects a temperature of the reforming catalyst; and a determining portion (5) that determines whether the reforming catalyst is degraded based on the temperature of the reforming catalyst detected by the temperature sensor (6,32,10,47,66,51); (pp.6 of machine translation, lines 1-19).

With respect to claim 13, at least one of temperature sensors (6,32,10,47,66,51) is disposed on a downstream side of the reforming catalyst.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-12,18,36 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,641,944 to Kawasumi.

With respect to claims 4-12,36 while no reference is made to temperature rate measurement, since a computer controller (90) (determining portion) is provided as the sole device for controlling the entire apparatus, it is clear that such a controller is capable of carrying out any time based calculation such as recording temperature measurements as a function of time. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. In the alternative, the claimed temperature rate measurement would obviously have been provided by the computer controller (90) (determining portion) disclosed by Kawasumi. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

With respect to claims 3,18,21 while no reference is made air fuel ratio control based on the temperature of the reforming catalyst measured, since a computer controller (90) (determining portion) is provided as the sole device for controlling the entire apparatus, it is clear that such a controller is capable of carrying out air fuel ratio control as claimed. In the alternative, the claimed air fuel ratio control would obviously have been provided by the computer controller (90) (determining portion) disclosed by Kawasumi. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

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9. Claims 3-12,18,36 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 2000-268840 to Tetsuo.

With respect to claims 4-12,36 while no reference is made to temperature rate measurement, since a computer controller (5) (determining portion) is provided as a diagnostic device for controlling the apparatus, it is clear that such a controller is capable of carrying out any time based calculation such as recording temperature measurements as a function of time. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. In the alternative, the claimed temperature rate measurement would obviously have been provided by the computer controller (5) (determining portion) disclosed by Kawasumi. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

With respect to claims 3,18, while no reference is made air fuel ratio control based on the temperature of the reforming catalyst measured, since a computer controller (5) (determining portion) is provided as a diagnostic device for controlling the apparatus, it is clear that such a controller is capable of carrying out air fuel ratio control as claimed. In the alternative, the claimed air fuel ratio control would obviously have been provided by the computer controller (5) (determining portion) disclosed by Kawasumi. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102.

Claim Rejections - 35 USC § 103

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10. Claims 2,14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-268840 to Tetsuo.

With respect to claims 2,14-17, the instant limitations recite steps that the determining portion does not appear to explicitly carryout. However, given that Tetsuo is generally directed to using temperature correlations to determine catalyst degradation via the use of temperature sensors (pp.6 of machine translation, lines 1-19). Therefore, one of ordinary skill would have employed the claimed steps to determine catalyst degradation since said steps are not seen to impart unexpected results nor appear to have associated criticality with their specific application and as such would have involved routine engineering design choice.

Allowable Subject Matter

11. Claims 24,26-30,33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

With respect to claim 24, the instant method limitation has not been found in the prior art. The relied on prior art teaches that catalyst degradation is indicated if catalyst temperature exceeds a predetermined temperature. No discussion of time based measurement of temperature is discussed.

With respect to claim 26, the instant method limitation has not been found in the prior art. The relied on prior art teaches that catalyst degradation is indicated if catalyst temperature exceeds a predetermined temperature. No discussion of time based

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measurement of temperature is discussed. Moreover, no disclosure is provided that catalyst degradation is determined based on the temperature falling faster than a predetermined rate. Claim 27 depends on the instant claim.

With respect to claim 28, the instant method limitation has not been found in the prior art. The relied on prior art teaches that catalyst degradation is indicated if catalyst temperature exceeds a predetermined temperature. No discussion of time based measurement of temperature is discussed. Moreover, the disclosure does not discuss rate at which the temperature of the reforming catalyst falls. Claim 29 depends on the instant claim.

With respect to claim 30, the instant method limitation has not been found in the prior art. The prior art does not discuss determining degradation of catalyst on measuring a rate of temperature change after air fuel ratios are changed.

With respect to claim 33, the relied on art does not disclose that the reforming catalyst is determined to be degraded if, after observing that the temperature detected on the downstream side of the reforming catalyst is higher than the predetermined temperature, the detected temperature then falls below a predetermined temperature.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Wachtel whose telephone number is 571-272-1455. The examiner can normally be reached on 10:30am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached at (571)-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script, appearing to be 'CW'.A handwritten signature in cursive script, appearing to be 'Glenn'.

Glenn Caldarola
Supervisory Patent Examiner
Electronic Business Center 1700